

Toothbrushes: Which toothbrushes remove plaque best?



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Brushing your teeth is an effective way of protecting the teeth from tooth decay. However, protection against cavities is mainly provided by toothpaste that has small amounts of fluoride in it for hardening the teeth. You can read more about the effects of fluoride here (URL: <http://www.informedhealthonline.org/fluoride.267.56.en.html>) .

Cleaning the teeth using a brush is done mainly to remove the plaque that builds up mostly along the gum-line. Bacteria living in the plaque not only can promote tooth decay, but can also cause gingivitis (inflammation of the gums). Inflamed gums are often accompanied by bleeding. Inflamed gums often do not cause any immediate symptoms, but sometimes the inflammation spreads to the periodontium that anchors the teeth in the jaw bone. The medical term for this is "periodontitis". If left untreated, after several years periodontitis can lead to teeth becoming loose or even falling out.

Differences in different types of toothbrushes

In light of this it is important to know whether plaque can be removed better with any particular kind of toothbrush. There are many different types of toothbrushes. The essential difference in electric toothbrushes is down to the movement of the toothbrush head: Some toothbrushes have a head that makes a rapid back-and-forth motion, others have one that rotates. Some brushes vary this circular motion, for example by changing the direction of rotation several times per second. Types of brushes like this are called "rotating-oscillating".

Electric toothbrushes put to the test

To answer the question of which electric toothbrush best cleans teeth, researchers from the Cochrane Collaboration systematically analyzed all available trials comparing these toothbrushes. The Cochrane Collaboration is an international network of many researchers who analyze and summarize the results of trials.

In trials comparing toothbrushes researchers observe what happens when one group of people uses one particular kind of toothbrush and a similar group of people uses another. You can read more about why this kind of trial is

important to compare two treatments here (URL: <http://www.informedhealthonline.org/index.61.en.html>) .

The researchers found 15 suitable trials involving more than 1,000 participants. In these trials a total of 7 different kinds of electric toothbrushes were tested.

The results were anything but clear: none of the electric toothbrushes tested was definitely more effective in cleaning away plaque than any other. Researchers also checked whether the likelihood of bleeding gums had been reduced within three months.

After three months there was only a very small difference between the various electric toothbrushes in gingivitis or plaque. A major problem with the research results was that there were too few trials that could be compared to be able to make reliable statements.

Assessing bleeding gums and plaque

There are several ways to measure how well a toothbrush can clean the teeth. In some trials the researchers counted the number of places there was plaque on the surface of the tooth by checking different parts of the tooth. In some cases, the plaque was dyed to make it more visible using either chewable tablets or a rinse.

In other trials the researchers examined the gum around each individual tooth for typical signs of inflammation such as reddening, swelling or sudden bleeding of the gums, for example. Dentists can measure bleeding by pressing an instrument against the participants' gum tissue at several points and then counting the number of these points where bleeding started.

People who do not have much trouble with bleeding gums anyway will probably hardly notice any difference between the different electric toothbrushes. It is also not at all clear whether using an electric toothbrush also reduces the amount of serious tooth disease like periodontitis.

There is hardly any information about adverse effects of electric toothbrushes. Damage to gum tissue or teeth by electric toothbrushes was rare in the trials.

Electric versus manual toothbrushes

The same researchers from the Cochrane Collaboration studied whether or not electric toothbrushes remove

plaque better than ordinary manual toothbrushes. However, there is currently no clear answer to this question because there are many new research results yet to be evaluated. We will keep you informed on our website as soon as the analysis of the latest research on this question is published.

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Next planned update: January 2014. You can find out more about how our health information is updated here (URL: [http://www.gesundheitsinformation.de/index.643.en.html?bab\[subpage_id\]=0-8](http://www.gesundheitsinformation.de/index.643.en.html?bab[subpage_id]=0-8))

Glossary

Cochrane Collaboration

The Cochrane Collaboration is an international network of thousands of researchers and others. They work together in teams called Cochrane Review Groups to answer questions about health care by doing systematic reviews of evidence. To achieve this, the members of the Collaboration have developed systems and methods for systematically finding and analysing the results of trials of health care interventions. The goal of the Cochrane Collaboration is to help patients, health care practitioners and others make more informed decisions about health care. You can read more about the Cochrane Collaboration at their website.

fluoride

Fluoride is a naturally occurring substance. It is used in toothpaste and table salt as a preventive measure against tooth decay (caries or cavities). If children get too much fluoride, it can affect the development of the tooth enamel, causing white patches on the teeth. This is toothpastes made for children have less fluoride than toothpastes for adults.

gingivitis

Gingivitis is the medical term for gum inflammation. Signs are swelling, reddening or bleeding in the area near the edges of the gums. Plaque building up near the gums is often a cause of gingivitis, because bacteria grow in plaque.

periodontitis

Periodontitis is an infection of the tissues that fix the teeth to the bone. It is mostly caused by bacteria living in plaque. It can cause enough damage to lose teeth.

plaque

Tooth plaque is a furry growth on the teeth that gathers most at the edges of the gums. Plaque develops in a sticky layer of protein on the teeth. Bacteria then gather and grow in this layer, which forms a solid coating.

inflammation

An inflammation is a (defense) reaction of the body to an injury, irritation or infection. More blood is brought to the respective body part to protect the body. This is why this

body part feels warmer, becomes swollen and red and is usually more sensitive. If the inflammation affects the mucous membranes, they secrete more fluid than usual. This helps to wash out the germs that have entered.

Sources

IQWiG health information is based on research in the international literature. We identify the most scientifically reliable knowledge currently available, particularly what are known as “systematic reviews”. These summarize and analyze the results of scientific research on the benefits and harms of treatments and other health care interventions. This helps medical professionals and people who are affected by the medical condition to weigh up the pros and cons. You can read more about systematic reviews and why these can provide the most trustworthy evidence about the state of knowledge here (URL: <http://www.informedhealthonline.org/index.61.en.html>) . We also have our health information reviewed to ensure the medical and scientific accuracy of our products.

Deacon SA, Glenny AM, Deery C, Robinson PG et al. Different powered toothbrushes for plaque control and gingival health. *Cochrane Database of Systematic Reviews* 2010, Issue 12: CD004971 [PubMed summary (URL: <http://www.ncbi.nlm.nih.gov/pubmed/21154357>)]

Robinson PG, Deacon SA, Deery C, Heanue M et al. Manual versus powered toothbrushing for oral health. *Cochrane Database of Systematic Reviews* 2005, Issue 2: CD002281 [PubMed summary (URL: <http://www.ncbi.nlm.nih.gov/pubmed/15846633>)]

The German Institute for Quality and Efficiency in Health Care (IQWiG)

The German Institute for Quality and Efficiency in Health Care (IQWiG) was established by legislation to provide evaluations of the effectiveness, quality and efficiency of healthcare services. This includes the assessment of medicines as well as the publication of health information for consumers and patients.

Evidence basis of our health information

Our information is based primarily on systematic reviews of the effects of health care. Systematic reviews are necessary to gain an objective picture of health care. In order to do this, a clear question is formulated. Researchers then find all the relevant studies that could answer this question. They then evaluate those studies.

You can find a list of the evidence and other scientific literature on which this information is based at **www.informedhealthonline.org**

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